

Technical Challenges

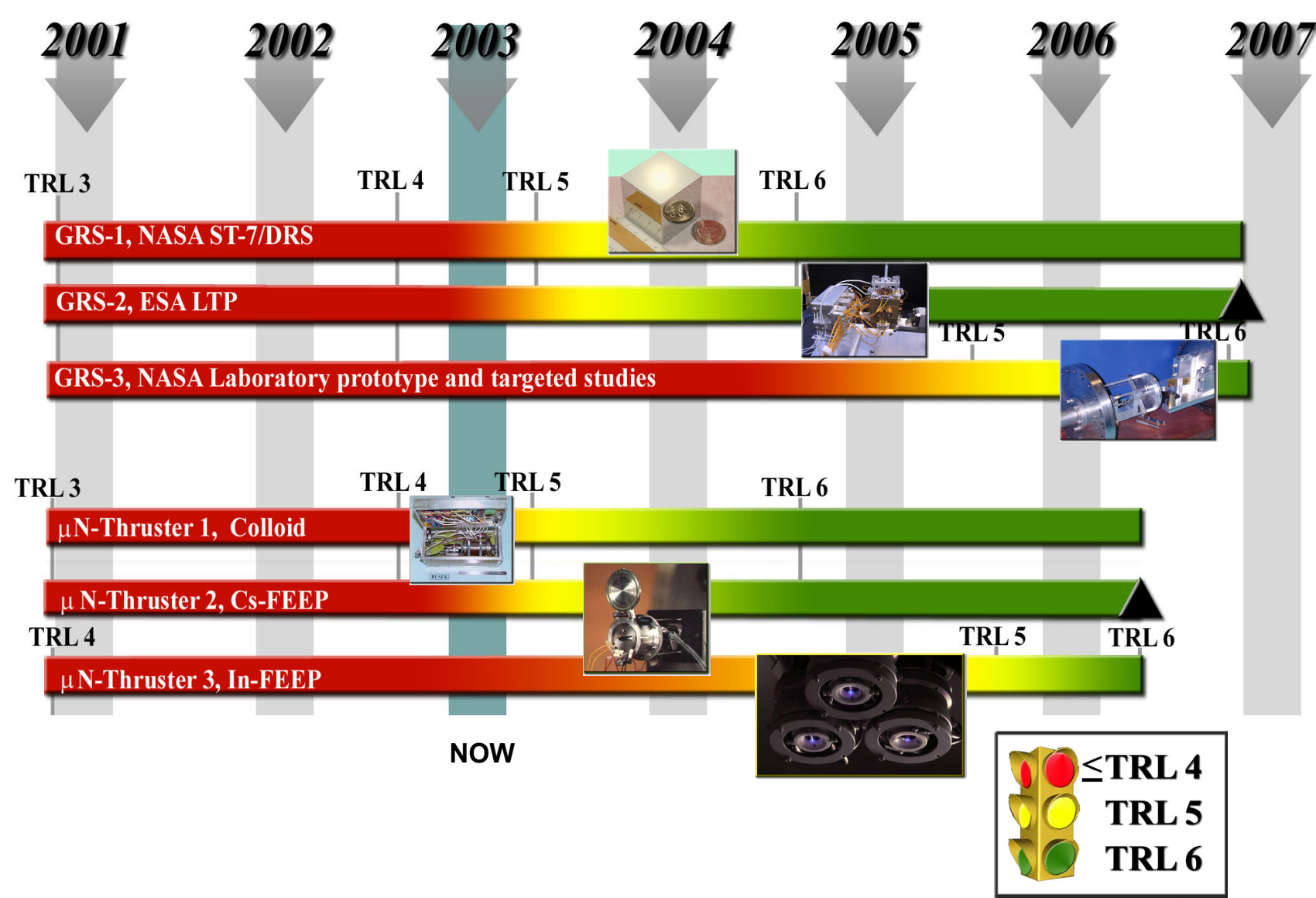
Stephen Merkowitz



LISA Technology Development Roadmap

SE&I Pre-Proposal Meeting

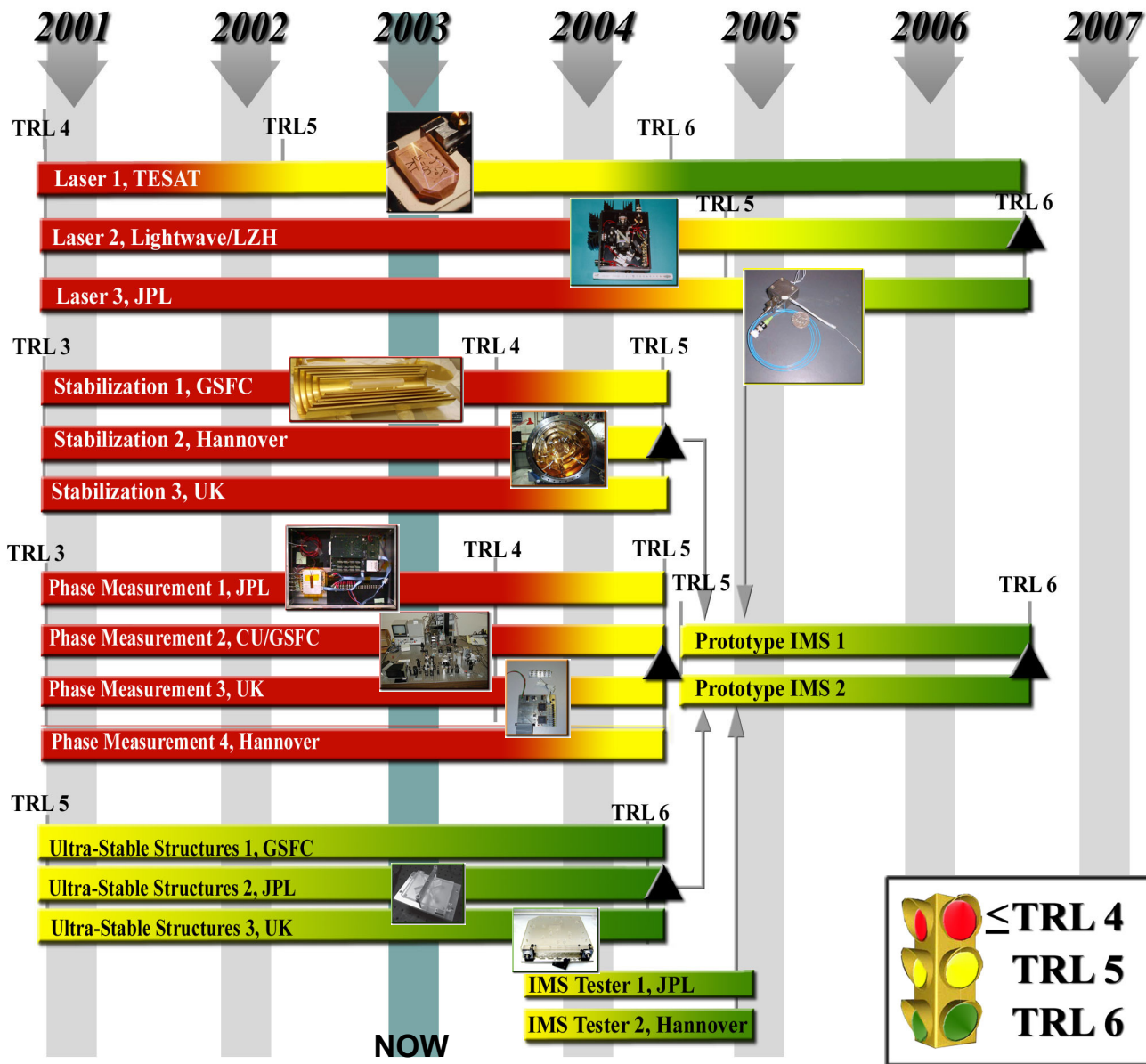
Beyond Einstein:
From the Big Bang
to Black Holes



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Design Challenges

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Integrated design

- Clean interfaces
- Modular testability



Challenging requirements

- Self-gravity
- Structural stability
- Thermal stability
- Magnetic



Integrated modeling

- Model verification
- Model precision
- Multi-discipline integration
- Configuration control

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Given the constraints:

- GRS cannot be operated at full sensitivity on the ground
- No 5 million km arms
- No vibrationally and thermally quiet environment



How do we:

- Verify GRS performance
- Demonstrate drag-free control
- Verify frequency noise corrections
- Verify thermal requirements
- Verify self-gravity requirements
- Verify structural stability requirements
- Verify constellation acquisition
- Verify constellation science mode